

AD-A102 756

ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND WS--ETC F/6 4/2  
193040 MLRS, MISSILE NUMBERS BK-003, V01-005, V01-006, ROUND NU--ETC(U)  
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METEOROLOGICAL DATA REPORT

19304D MLRS

Missile Numbers BK-003, V01-005, V01-006  
Round Numbers V-155/MD-22, V-156/MD-23, V-157/MD-24  
19 June 1981

by

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ATMOSPHERIC SCIENCES LABORATORY  
WHITE SANDS MISSILE RANGE, NEW MEXICO

ECOM

UNITED STATES ARMY ELECTRONICS COMMAND

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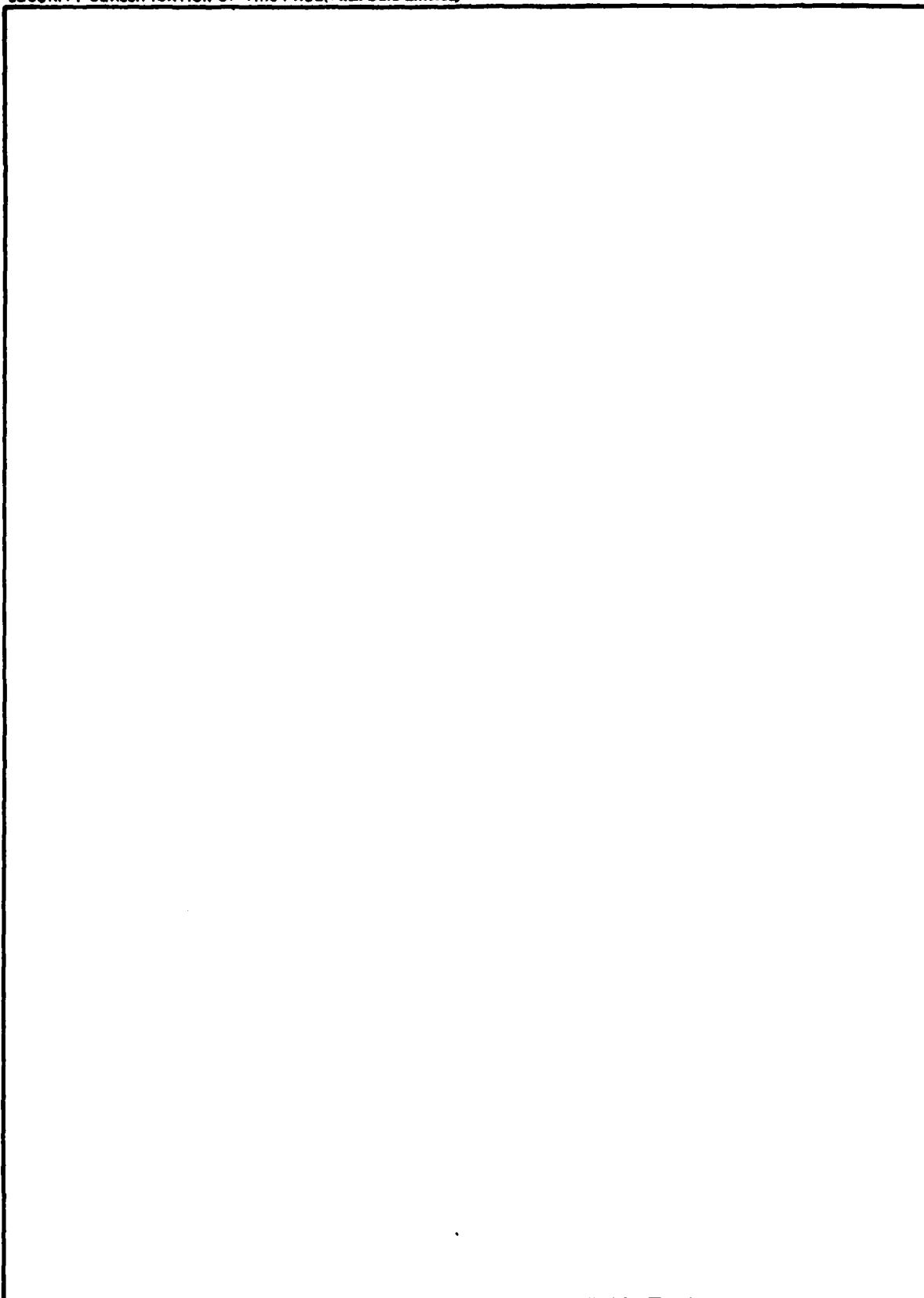
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## INTRODUCTION

19304D MLRS, Missile Numbers BK-003, V01-006, and V01-006, Round Numbers V-155/MD-22, V-156/MD-23, and V-157/MD-24, were launched from LC-33, White Sands Missile Range (WSMR), New Mexico, at 1730:01, 1730:05, and 1730:10 MDT, 19 June 1981. The scheduled launch times were 1730, 1730:04.5, and 1730:09 MDT.

## DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

### 1. Observation:

#### a. Surface

(1) Standard surface observations to include pressure, temperature ( $^{\circ}\text{C}$ ), relative humidity, dew point ( $^{\circ}\text{C}$ ), density ( $\text{gm/m}^3$ ), wind direction and speed, and cloud cover were made at the LC-33 Met Site at T-0 minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

#### b. Upper Air:

(1) Low level wind data were obtained from Pilot-Balloon observations at:

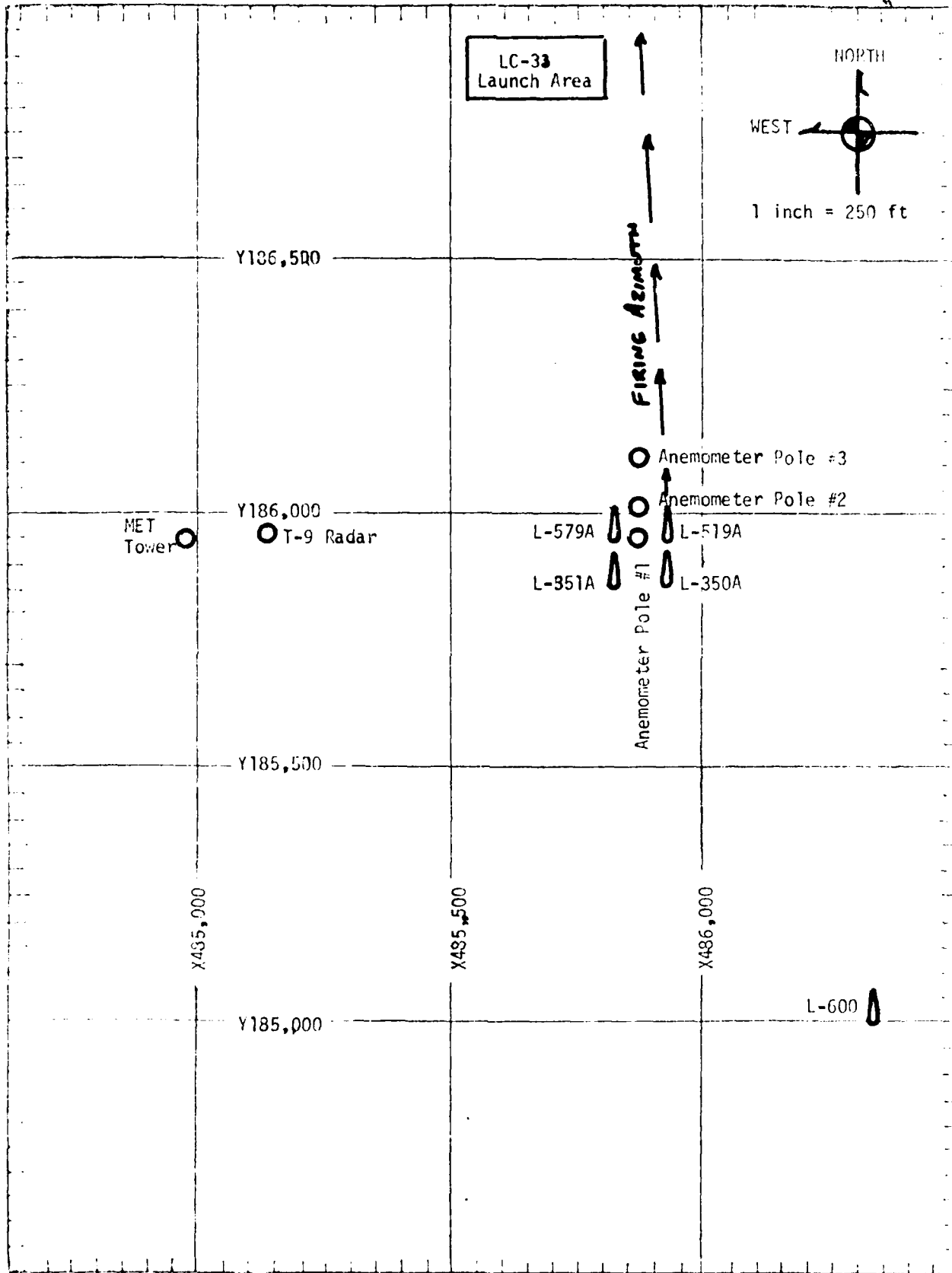
### SITE AND ALTITUDE

LC-33	2 KM
NICK	2 KM

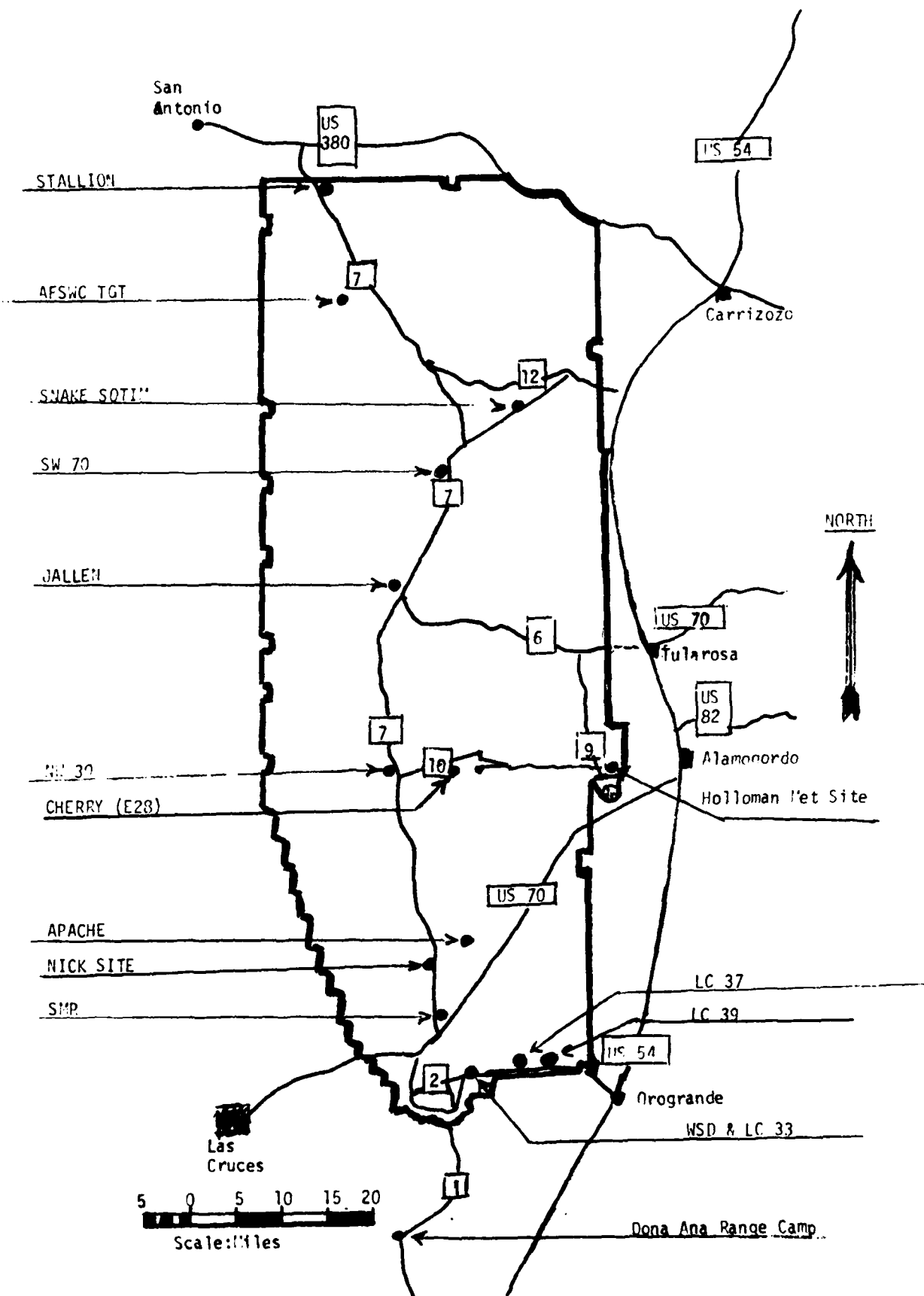
(2) Air structure data (rawinsonde) were collected at the following Met Sites:

### SITE AND TIME

WSD	1435 MDT
LC-37	1530 MDT
WSD	1630 MDT
LC-37	1730 MDT







# PROJECT SURFACE OBSERVATION

STATION LC-33										
TABLE 1		DATE 19 June 1981		X= 484,982.64 Y= 185,957.73 H=2983.00						
TIME MDT		DAY	MONTH	YEAR	TEMPERATURE OF °C	DEW POINT OF °C	RELATIVE HUMIDITY %	DENSITY gm/m <sup>3</sup>	WIND	VISIBILITY
									SPEED kts	CHARACTER kts
1730					38.0	-7.3	5	974	06	622

OBSTRUCTIONS TO VISIBILITY	CLOUDS						REMARKS
	1st LAYER		2nd LAYER		3rd LAYER		
	AMT	TYPE	AMT	TYPE	AMT	TYPE	
	0	CU	8000	-	-	-	Few CU ovr Mtns NE-SE

## PSYCHROMETRIC COMPUTATION

TIME:	MDT	1730	
DRY BULB TEMP.		38.0	
WET BULB TEMP.		14.7	
WET BULB DEPR.		23.3	
DEW POINT		-7.3	
RELATIVE HUMID.		5	

TABLE 2

LC-33 FIXED POLE ANEMOMETER MEASURED WINDS  
1730 MDT  
19 June 1981

POLE #1 X485,874.29 Y185,958.90 H4018.74 38.7 ft. AGL			POLE #2 X485,874.93 Y186,012.00 H4033.57 53.0 ft. AGL			POLE #3 X485,877.27 Y186,116.00 H4063.90 33.6 ft. AGL		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T-30	279	03	T-30	285	06	T-30	283	05
T-20	275	03	T-20	289	05	T-20	270	04
T-10	282	03	T-10	306	05	T-10	273	03
T0.0	300	02	T0.0	309	04	T0.0	284	02
T+10	300	01	T+10	330	04	T+10	286	01

TABLE 3

LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1, 12 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #2, 62 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T-30	315	02	T-30	308	03
T-20	314	02	T-20	285	03
T-10	288	02	T-10	262	04
T0.0	259	02	T0.0	241	04
T+10	243	04	T+10	240	05

LEVEL #3, 102 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #4, 102 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T-30	252	04	T-30	228	04
T-20	252	04	T-20	236	06
T-10	252	03	T-10	236	06
T0.0	243	04	T0.0	234	05
T+10	237	04	T+10	237	04

TABLE 4T-TIME PILOT-BALLOON MEASURED WIND DATA  
DATE 19 June 1981

SITE: LC-33  
TIME: 1730 MDT  
WSTN COORDINATES:  
X= 485,135.76  
Y= 185,919.24  
H= 3988.57

SITE: NICK  
TIME: 1730 MDT  
WSTN COORDINATES:  
X= 470,734.56  
Y= 255,775.64  
H= 4126.57

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	270	03
150	275	03
210	277	03
270	279	04
330	280	04
390	280	04
500	280	05
650	280	06
800	281	05
950	284	05
1150	282	05
1350	281	05
1550	281	04
1750	287	04
2000	283	04

Data obtained from Single Theodolite  
tracked Pilot-Balloon observation.

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	340	03
150	299	09
210	309	10
270	290	08
330	275	06
390	253	05
500	258	06
650	278	09
800	307	09
950	331	07
1150	313	09
1350	333	09
1550	330	11
1750	335	12
2000	337	11

Data obtained from T-9 radar tracked  
Pilot-Balloon observation.

TABLE 5

AIMING AND T-Time COMPUTER MET MESSAGES  
19 June 1981

WSD 1435 MDT

METCM1324064

192060122878

00213002 31050878

01286003 30970868

02223001 30750845

03383003 30360808

04394003 29870763

05459006 29370720

06398009 28900680

07397008 28440640

08446007 27980603

LC-37 1530 MDT

METCM1324063

192150124874

00373005 31300874

01421007 31010865

02418007 30750841

03418004 30370804

04478003 29900760

05621002 29440718

06427002 28920677

07448012 28420638

08453007 27920601

WSD 1630 MDT

METCM1324064

192250122877

00320007 31220877

01353020 31120867

02303018 30860843

03319016 30470807

04326008 29970762

05350004 29400720

06389003 28900679

07394010 28460640

08395008 28000602

LC-37 1730 MDT

METCM1324063

192350124873

00356005 31110873

01464010 31040864

02344009 30850840

03370010 30460804

04392010 29960760

05301007 29450717

06389006 28930677

07432007 28420637

08456010 27930600

STATION ALTITUDE 3989.00 FEET MSL  
19 JUNE 81 1435 HRS MDT  
ASCENSION NO. 399

SIGNIFICANT LEVEL DATA  
17000.0399  
WHITE SANDS

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LONG DEG

TABLE 6

PRESSURE	GEOMETRIC	TEMPERATURE	REL. HUM.
MILLIBARS	ALTITUDE	AIR DEWPOINT	PERCENT
	MSL FEET	DEGREES CENTIGRADE	
877.8	3989.0	36.9	14.0
850.0	4047.4	33.1	25.0
736.8	9097.7	21.4	29.0
700.0	10544.8	17.2	31.0
627.6	13753.0	9.1	31.0
534.6	17835.3	-2.9	39.0
500.0	19569.3	-5.9	28.0
486.2	20290.2	-6.0	25.0
400.0	25210.6	-17.3	30.0
340.4	29111.9	-27.5	38.0
300.0	32009.9	-33.3	34.0
265.4	34805.8	-39.8	31.0
250.0	36204.2	-42.7	
226.4	38391.4	-46.4	
200.0	41074.9	-51.4	
172.6	44187.2	-57.3	
150.0	47073.2	-63.1	
127.2	50384.3	-67.4	
106.2	53933.3	-71.8	
100.0	55106.8	-70.8	
70.0	62186.9	-64.9	
50.0	69108.1	-56.2	
42.8	72371.2	-56.5	
32.8	78066.5	-47.8	
30.0	80918.8	-46.8	
23.0	85860.3	-45.8	
20.0	88967.5	-41.9	

STATION ALTITUDE 3989.00 FEET MSL  
19 JUNE 81 1435 HRS MDT  
ASCENSION NO. 399

UPPER AIR DATA  
1700020399  
WHITE SANDS

GEODETIC COORDINATES  
32.40043 LAT UEG  
106.37033 LON DEG

TABLE 7

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CELSIUS	REL HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
3989.0	877.8	36.9	5.0	982.6	687.3	120.0	1.9	1.000253
4000.0	877.5	36.9	5.1	982.3	687.2	120.1	1.9	1.000254
4500.0	862.9	34.9	8.5	971.1	685.4	123.6	1.6	1.000261
5000.0	848.5	33.0	10.3	960.2	683.5	129.1	1.3	1.000265
5500.0	834.0	31.5	9.4	948.4	681.9	187.5	1.0	1.000260
6000.0	819.7	30.1	8.5	936.8	680.2	214.2	2.0	1.000255
6500.0	805.7	28.7	7.6	925.3	678.5	213.9	2.9	1.000250
7000.0	792.0	27.3	6.7	914.0	676.9	210.1	2.5	1.000245
7500.0	776.5	25.9	5.7	902.8	675.2	219.7	2.2	1.000240
8000.0	765.2	24.5	4.8	891.8	673.5	220.3	2.0	1.000235
8500.0	752.1	23.1	3.8	880.9	671.9	225.9	2.5	1.000231
9000.0	739.3	21.7	2.8	870.2	670.2	248.7	4.4	1.000227
9500.0	726.4	20.2	1.9	859.4	668.5	250.0	5.7	1.000222
10000.0	713.6	18.8	1.0	848.6	666.8	248.6	6.7	1.000218
10500.0	701.1	17.3	.0	836.0	665.1	237.6	7.2	1.000214
11000.0	688.6	16.0	-1.1	827.1	663.5	228.9	8.1	1.000210
11500.0	676.2	14.6	-2.3	816.2	661.8	224.6	9.3	1.000206
12000.0	664.1	13.3	-3.5	805.5	660.2	224.2	9.0	1.000201
12500.0	652.2	11.9	-4.6	794.9	658.6	223.5	8.3	1.000197
13000.0	640.5	10.6	-5.8	784.5	657.0	224.0	7.7	1.000193
13500.0	629.0	9.2	-7.0	774.3	655.4	228.9	7.5	1.000190
14000.0	617.4	7.8	-7.9	763.8	653.7	238.5	7.2	1.000186
14500.0	605.9	6.4	-8.7	753.4	652.1	251.7	7.0	1.000183
15000.0	594.6	5.0	-9.6	743.2	650.4	266.4	7.4	1.000180
15500.0	583.6	3.6	-10.5	733.2	648.7	278.3	8.3	1.000177
16000.0	572.7	2.2	-11.4	723.3	647.0	286.4	9.2	1.000174
16500.0	562.1	.8	-12.3	713.5	645.4	291.9	10.1	1.000171
17000.0	551.6	-6	-13.3	703.9	643.7	298.1	10.5	1.000168
17500.0	541.4	-2.0	-14.2	694.4	642.0	307.0	10.4	1.000165
18000.0	531.2	-3.2	-15.5	684.6	640.5	324.8	9.9	1.000162
18500.0	521.1	-4.0	-17.3	673.8	639.4	348.6	10.3	1.000158
19000.0	511.1	-4.9	-19.2	663.1	638.4	354.9	10.7	1.000155
19500.0	501.3	-5.8	-21.1	652.7	637.3	358.8	11.0	1.000151
20000.0	491.7	-6.0	-22.2	640.6	636.1	346.7	10.1	1.000148
20500.0	482.2	-6.5	-23.1	629.4	634.4	334.4	9.7	1.000145
21000.0	472.7	-7.6	-23.9	619.8	635.0	331.4	9.6	1.000143
21500.0	463.4	-8.8	-24.6	610.2	633.6	328.5	9.5	1.000140
22000.0	454.3	-9.9	-25.4	600.9	632.3	326.2	9.4	1.000138
22500.0	445.4	-11.1	-26.2	591.7	630.9	323.8	9.2	1.000136
23000.0	436.7	-12.2	-27.0	582.6	629.5	321.3	9.0	1.000133

STATION ALTITUDE 3989.00 FEET MSL  
 19 JUNE 81 1435 HRS MDT  
 ASCENSION NO. 399

UPPER AIR DATA  
 1700020399  
 WHITE SANDS

GEODETIC COORDINATES  
 32.40043 LAT DEG  
 106.37033 LON DEG

TABLE 7 CONT

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
23500.0	428.1	-13.4	28.3	573.7	628.1	319.3	8.9	1.000131
24000.0	419.7	-14.5	28.8	565.0	628.7	318.7	9.2	1.000129
24500.0	411.4	-15.7	29.3	556.4	625.3	317.7	9.5	1.000127
25000.0	403.4	-16.8	29.8	547.9	623.9	314.6	9.9	1.000125
25500.0	395.2	-18.1	30.6	539.5	622.4	312.6	10.3	1.000123
26000.0	387.2	-19.4	31.6	531.2	620.7	316.9	11.2	1.000121
26500.0	379.2	-20.7	32.6	523.1	619.1	320.8	12.0	1.000119
27000.0	371.5	-22.0	33.7	515.0	617.5	326.1	12.9	1.000117
27500.0	363.9	-23.3	34.7	507.1	615.9	330.7	13.8	1.000115
28000.0	356.4	-24.6	35.7	499.4	614.3	330.7	14.9	1.000113
28500.0	349.1	-25.9	36.7	491.8	612.7	330.8	15.9	1.000111
29000.0	342.0	-27.2	37.8	484.3	611.0	330.4	17.5	1.000109
29500.0	334.8	-28.3	37.5	476.2	609.7	330.0	19.1	1.000107
30000.0	327.7	-29.2	36.8	468.0	608.5	329.0	19.5	1.000106
30500.0	320.8	-30.2	36.1	459.9	607.3	327.7	19.3	1.000104
31000.0	314.0	-31.2	35.4	452.1	606.0	325.6	18.7	1.000102
31500.0	307.4	-32.2	34.8	444.3	604.8	322.4	18.0	1.000100
32000.0	300.9	-33.2	34.1	436.7	603.6	320.5	17.8	1.000098
32500.0	294.4	-34.3	33.5	429.3	602.1	321.5	18.7	1.000096
33000.0	288.0	-35.5	33.0	422.1	600.7	322.5	19.5	1.000095
33500.0	281.8	-36.6	32.5	415.0	599.2	323.1	19.2	1.000093
34000.0	275.7	-37.8	31.9	408.0	597.7	323.7	18.8	1.000091
34500.0	269.7	-38.9	31.4	401.1	596.2	322.7	18.3	1.000090
35000.0	263.8	-40.1	27.9**	394.3	594.8	320.9	17.6	1.000088
35500.0	258.0	-41.2	16.3**	387.4	593.4	319.7	17.0	1.000086
36000.0	252.3	-42.3	4.7**	380.6	592.0	319.3	16.6	1.000085
36500.0	246.7	-43.2		373.7	590.8	319.7	16.0	1.000083
37000.0	241.1	-44.0		366.7	589.7	324.2	15.1	1.000082
37500.0	235.7	-44.9		359.8	588.6	329.2	14.3	1.000080
38000.0	230.5	-45.7		353.0	587.5	327.2	13.1	1.000079
38500.0	225.3	-46.6		346.4	586.4	324.0	11.8	1.000077
39000.0	220.1	-47.5		339.9	585.2	315.9	11.0	1.000076
39500.0	215.1	-48.5		333.5	584.0	305.5	10.8	1.000074
40000.0	210.2	-49.4		327.2	582.7	301.5	11.5	1.000073
40500.0	205.4	-50.3		321.1	581.5	304.6	12.8	1.000072
41000.0	200.7	-51.3		315.1	580.3	307.0	14.2	1.000070
41500.0	196.0	-52.2		309.1	579.1	308.6	15.9	1.000069
42000.0	191.4	-53.2		303.1	577.8	309.8	17.5	1.000068
42500.0	187.0	-54.1		297.3	576.6	311.1	17.9	1.000066
43000.0	182.6	-55.0		291.6	575.3	312.6	17.6	1.000065

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.



STATION ALTITUDE 3989.00 FEET MSL  
19 JUNE 61 1435 HRS MDT  
ASCENSION NO. 399

UPPER AIR DATA  
1700020399  
WHITE SANDS

GEODETTIC COORDINATES  
32.40043 LAT UEG  
106.37033 LON UEG

TABLE 7 CON'T

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
43500.0	176.3	-56.0		286.0	574.1	313.4	16.9	1.000064
44000.0	174.1	-56.9		280.6	572.8	313.3	15.5	1.000062
44500.0	170.0	-57.9		275.2	571.5	313.7	14.2	1.000061
45000.0	165.9	-58.9		269.8	570.2	316.1	13.2	1.000060
45500.0	161.9	-59.9		264.6	568.9	318.6	12.2	1.000059
46000.0	158.0	-60.9		259.4	567.5	319.6	11.7	1.000058
46500.0	154.2	-61.9		254.4	566.2	320.1	11.4	1.000057
47000.0	150.5	-63.0		249.5	564.8	317.4	11.5	1.000056
47500.0	146.8	-63.7		244.2	563.9	311.2	12.6	1.000054
48000.0	143.2	-64.3		238.9	563.0	306.0	13.8	1.000053
48500.0	139.7	-65.0		233.8	562.1	301.9	15.1	1.000052
49000.0	136.3	-65.6		228.7	561.2	298.4	16.4	1.000051
49500.0	132.9	-66.3		223.8	560.4	298.1	17.7	1.000050
50000.0	129.7	-66.9		219.0	559.5	303.2	18.8	1.000049
50500.0	126.5	-67.5		214.3	558.6	307.6	20.2	1.000048
51000.0	123.3	-68.2		209.5	557.8	313.1	19.9	1.000047
51500.0	120.2	-68.8		204.9	556.9	319.5	19.1	1.000046
52000.0	117.2	-69.4		200.3	556.1	325.7	18.3	1.000045
52500.0	114.2	-70.0		195.9	555.2	327.0	15.2	1.000044
53000.0	111.4	-70.6		191.6	554.4	328.9	12.2	1.000043
53500.0	108.6	-71.3		187.3	553.5	329.2	10.6	1.000042
54000.0	105.8	-71.7		183.1	552.9	327.3	10.4	1.000041
54500.0	103.2	-71.3		178.1	553.5	325.3	10.2	1.000040
55000.0	100.5	-70.9		173.2	554.1	326.5	11.4	1.000039
55500.0	98.0	-70.5		168.5	554.6	327.9	12.8	1.000038
56000.0	95.6	-70.1		164.0	555.2	329.9	13.9	1.000037
56500.0	93.2	-69.6		159.6	555.8	336.6	13.2	1.000036
57000.0	90.9	-69.2		155.3	556.3	343.9	12.7	1.000035
57500.0	88.6	-68.8		151.1	556.9	350.3	11.1	1.000034
58000.0	86.4	-68.4		147.1	557.5	21.1	9.2	1.000033
58500.0	84.3	-68.0		143.1	558.0	50.5	9.5	1.000032
59000.0	82.2	-67.6		139.3	558.6	65.5	10.2	1.000031
59500.0	80.1	-67.1		135.5	559.2	76.3	11.0	1.000030
60000.0	78.2	-66.7		131.9	559.7	84.9	11.9	1.000029
60500.0	76.2	-66.3		128.3	560.3	90.4	11.0	1.000029
61000.0	74.3	-65.9		124.9	560.9	96.7	10.2	1.000028
61500.0	72.5	-65.5		121.6	561.4	104.2	9.2	1.000027
62000.0	70.7	-65.1		118.3	562.0	114.2	7.8	1.000026
62500.0	68.9	-64.5		115.1	562.7	127.9	6.8	1.000026
63000.0	67.3	-63.9		112.0	563.6	134.2	5.2	1.000025

STATION ALTITUDE 3489.00 FEET MSL  
19 JUNE 81 1435 HRS MDT  
ASCENSION NO. 399

UPPER AIR DATA  
1700020399  
WHITE SANDS

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

TABLE 7 CON'T

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE				DIRECTION DEGREES(TN)	SPEED KNOTS	
63500.0	65.7	-63.2			109.0	564.4	141.7	3.4	1.000024
64000.0	64.1	-62.6			106.1	565.3	156.1	1.9	1.000024
64500.0	62.6	-62.0			103.2	566.1	95.9	3.7	1.000023
65000.0	61.1	-61.4			100.4	566.9	82.0	6.8	1.000022
65500.0	59.6	-60.7			97.7	567.8	83.4	10.1	1.000022
66000.0	58.2	-60.1			95.1	568.6	92.9	13.9	1.000021
66500.0	56.8	-59.5			92.5	569.5	98.2	18.0	1.000021
67000.0	55.4	-58.8			90.1	570.3	101.2	18.4	1.000020
67500.0	54.1	-58.2			87.6	571.1	104.2	16.9	1.000020
68000.0	52.8	-57.6			85.3	572.0	107.8	15.4	1.000019
68500.0	51.5	-57.0			83.0	572.8	101.4	12.4	1.000018
69000.0	50.3	-56.3			80.8	573.6	90.0	9.6	1.000018
69500.0	49.1	-56.2			78.8	573.8	77.1	8.3	1.000018
70000.0	47.9	-56.3			77.0	573.7	81.6	10.7	1.000017
70500.0	46.8	-56.3			75.2	573.7	84.5	13.1	1.000017
71000.0	45.7	-56.4			73.4	573.6	85.9	15.1	1.000016
71500.0	44.6	-56.4			71.7	573.5	86.3	16.7	1.000016
72000.0	43.6	-56.5			70.0	573.5	86.7	18.2	1.000016
72500.0	42.5	-56.3			68.3	573.7	85.0	19.3	1.000015
73000.0	41.6	-55.5			66.5	574.7	82.5	20.3	1.000015
73500.0	40.6	-54.8			64.8	575.7	80.2	21.2	1.000014
74000.0	39.7	-54.0			63.1	576.7	80.6	23.0	1.000014
74500.0	38.7	-53.2			61.4	577.7	81.2	25.0	1.000014
75000.0	37.9	-52.5			59.8	578.7	81.8	27.0	1.000013
75500.0	37.0	-51.7			58.2	579.7	82.6	27.9	1.000013
76000.0	36.1	-51.0			56.6	580.7	83.5	28.7	1.000013
76500.0	35.3	-50.2			55.1	581.7	84.2	29.6	1.000012
77000.0	34.5	-49.4			53.7	582.7	86.6	29.5	1.000012
77500.0	33.7	-48.7			52.3	583.7	89.3	29.3	1.000012
78000.0	32.9	-47.9			50.9	584.7	92.1	29.1	1.000011
78500.0	32.2	-47.6			49.7	585.1	93.9	28.6	1.000011
79000.0	31.4	-47.3			48.5	585.4	95.5	28.0	1.000011
79500.0	30.7	-47.1			47.3	585.8	97.1	27.4	1.000011
80000.0	30.0	-46.8			46.2	586.1	94.4	26.3	1.000010
80500.0	29.4	-46.7			45.2	586.2	89.1	25.2	1.000010
81000.0	28.7	-46.6			44.1	586.3	83.4	24.3	1.000010
81500.0	28.0	-46.5			43.1	586.4	84.2	23.9	1.000010
82000.0	27.4	-46.5			42.1	586.6	90.6	24.0	1.000009
82500.0	26.8	-46.4			41.2	586.7	96.9	24.4	1.000009
83000.0	26.2	-46.3			40.2	586.8	103.0	25.1	1.000009

STATION ALTITUDE 3989.00 FEET ASL				UPPER AIR DATA				GEODETIC COORDINATES			
19 JUNE 61				1700020399				32.40043 LAT DEG			
ASCENSION NO. 399				WHITE SANDS				106.37033 LON DEG			
				1435 HRS MDT							
TABLE 7 CONT											
GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION		
		AIR DEGREES	DEWPOINT CENTIGRADE				DIRECTION DEGREES (TN)	SPEED KNOTS			
83500.0	25.6	-46.2			39.3	586.9	109.1	26.1	1.000009		
84000.0	25.0	-46.1			38.4	587.0	114.6	27.3	1.000009		
84500.0	24.5	-46.0			37.5	587.1	119.6	28.7	1.000008		
85000.0	23.9	-45.9			36.7	587.2	116.3	27.1	1.000008		
85500.0	23.4	-45.9			35.8	587.3	112.6	25.5	1.000008		
86000.0	22.9	-45.6			35.0	587.6	108.4	24.0	1.000008		
86500.0	22.3	-45.0			34.1	588.4			1.000008		
87000.0	21.9	-44.4			33.3	589.3			1.000007		
87500.0	21.4	-43.7			32.4	590.1			1.000007		
88000.0	20.9	-43.1			31.6	590.9			1.000007		
88500.0	20.4	-42.5			30.8	591.7			1.000007		

STATION ALTITUDE 3989.00 FEET MSL  
19 JUNE 81  
ASCENSION NO. 399

MANDATORY LEVELS  
1700020399  
WHITE SANDS  
TABLE 8

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE		DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	4944.	33.1	10.4	25.	128.4	1.3
800.0	6723.	28.1	7.2	27.	212.3	2.7
750.0	8583.	22.9	3.7	29.	227.0	2.6
700.0	10534.	17.2	-1.1	31.	236.7	7.3
650.0	12588.	11.7	-4.9	31.	223.3	8.2
600.0	14761.	5.7	-9.2	33.	259.8	7.2
550.0	17070.	-1.8	-13.4	38.	299.6	10.5
500.0	19541.	-5.9	-21.4	28.	357.5	10.9
450.0	22232.	-10.5	-25.8	27.	325.0	9.3
400.0	25168.	-17.3	-30.7	30.	313.5	10.0
350.0	28398.	-25.7	-36.2	37.	330.8	15.8
300.0	32005.	-33.3	-43.7	34.	320.6	17.9
250.0	36124.	-42.7			319.2	16.4
200.0	40974.	-51.4			307.2	14.4
175.0	43785.	-56.7			313.3	15.8
150.0	46944.	-63.1			316.7	11.6
125.0	50582.	-67.8			309.5	20.4
100.0	54934.	-70.8			326.7	11.6
80.0	59313.	-67.1			75.9	11.0
70.0	61971.	-64.9			118.1	7.4
60.0	65086.	-60.9			78.5	8.6
50.0	68845.	-56.2			87.8	9.2
40.0	73501.	-54.3			80.2	22.1
30.0	79673.	-46.8			94.6	26.4
25.0	83645.	-46.1			114.4	27.3
20.0	88545.	-41.9				

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

SIGNIFICANT LEVEL DATA  
1700180129  
LC-37

STATION ALTITUDE 4051.37 FEET MSL  
19 JUNE 81 1530 HRS MDT  
ASCENSION NO. 129

TABLE 9

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE		REL. HUM. PERCENT
		AIR DEGREES	DEWPOINT CENTIGRADE	
874.4	4051.4	39.0	-1.2	8.0
867.7	4281.8	35.7	6.0	16.0
848.4	4950.9	34.0	4.6	16.0
700.0	10509.0	18.8	-6.0	18.0
666.0	11899.1	13.9	-9.3	19.0
619.0	13904.2	8.1	-11.8	23.0
574.4	15910.9	2.2	-13.1	31.0
548.4	17134.8	-5.5	-16.3	29.0
506.8	19187.8	-5.9	-23.6	23.0
500.0	19535.5	-6.2	-26.0	19.0
482.0	20478.3	-6.5	-27.4	17.0
450.0	22231.7	-10.2	-30.5	17.0
419.4	24003.1	-14.2	-32.7	19.0
400.0	25177.9	-17.5	-35.5	19.0
340.0	29106.4	-27.4	-39.3	31.0
300.0	32037.3	-33.3	-45.8	27.0
282.2	33442.7	-36.6	-49.4	25.0
270.2	34427.6	-39.8		
250.0	36162.5	-43.6		
230.6	37940.7	-46.4		
200.0	41021.9	-51.4		
190.0	42113.0	-54.2		
167.2	44791.2	-58.1		
158.8	45853.4	-61.4		
150.0	47014.0	-63.3		

STATION ALTITUDE 4051.37 FEET MSL  
19 JUNE 81 1530 HRS MDT  
ASCENSION NO. 129

UPPER AIR DATA  
1700180129  
LC-37

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

TABLE 10

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION (TN) DEGREES	SPEED KNOTS	INDEX OF REFRACTION
4051.4	874.4	39.0	-1.2	8.0	973.5	689.1	210.0	5.1	1.000239
4500.0	861.4	35.1	5.6	16.0	969.4	685.4	213.3	4.7	1.000252
5000.0	847.0	33.9	4.6	16.0	957.4	683.9	217.6	4.3	1.000247
5500.0	832.4	32.5	3.6	16.2	945.4	682.3	222.8	3.9	1.000243
6000.0	818.2	31.1	2.7	16.4	933.5	680.7	229.0	3.6	1.000238
6500.0	804.1	29.8	1.7	16.6	921.8	679.1	236.4	3.3	1.000234
7000.0	790.3	28.4	.8	16.7	910.2	677.6	245.0	3.0	1.000230
7500.0	776.8	27.0	-.2	16.9	898.8	676.0	252.6	2.6	1.000226
8000.0	763.5	25.7	-1.1	17.1	887.6	674.4	261.1	2.1	1.000222
8500.0	750.4	24.3	-2.1	17.3	876.5	672.8	274.8	1.7	1.000218
9000.0	737.5	22.9	-3.0	17.5	865.6	671.2	293.0	1.2	1.000214
9500.0	724.9	21.6	-4.0	17.6	854.8	669.6	326.4	.8	1.000210
10000.0	712.4	20.2	-5.0	17.8	844.2	668.0	19.5	.8	1.000207
10500.0	700.2	18.8	-6.0	18.0	833.7	666.4	4.6	.6	1.000203
11000.0	687.8	17.1	-7.2	18.4	824.0	664.3	260.9	1.6	1.000200
11500.0	675.6	15.3	-8.3	18.7	814.4	662.3	251.6	3.3	1.000196
12000.0	663.6	13.6	-9.4	19.2	804.7	660.3	249.8	5.5	1.000193
12500.0	651.6	12.2	-10.0	20.2	794.2	658.6	251.4	8.9	1.000190
13000.0	639.8	10.7	-10.6	21.2	783.9	656.9	252.3	12.0	1.000187
13500.0	628.2	9.3	-11.2	22.2	773.7	655.2	255.2	11.2	1.000185
14000.0	616.8	7.8	-11.8	23.4	763.6	653.5	258.4	10.3	1.000182
14500.0	605.4	6.3	-12.0	25.4	753.4	651.8	260.1	8.9	1.000180
15000.0	594.2	4.9	-12.3	27.4	743.4	650.1	262.4	7.5	1.000177
15500.0	583.3	3.4	-12.8	29.4	733.6	648.4	280.0	8.0	1.000175
16000.0	572.5	2.0	-13.4	30.9	723.7	646.7	294.4	9.2	1.000172
16500.0	561.7	.9	-14.7	30.0	713.1	645.4	311.3	8.6	1.000169
17000.0	551.2	-.2	-16.0	29.2	702.7	644.0	329.6	8.7	1.000165
17500.0	540.8	-1.5	-17.6	27.9	692.6	642.5	347.7	8.9	1.000162
18000.0	530.5	-2.8	-19.4	26.5	682.8	640.9	9.1	8.8	1.000159
18500.0	520.4	-4.1	-21.1	25.0	673.2	639.3	25.2	9.6	1.000156
19000.0	510.5	-5.4	-22.9	23.5	663.7	637.7	22.0	9.5	1.000153
19500.0	500.7	-6.2	-25.7	19.4	653.0	636.7	16.1	9.1	1.000149
20000.0	491.0	-6.3	-26.7	18.0	640.8	636.5	359.3	8.3	1.000146
20500.0	481.6	-6.5	-27.5	17.0	629.0	636.3	340.6	8.1	1.000143
21000.0	472.2	-7.6	-28.4	17.0	619.2	635.0	321.7	8.4	1.000141
21500.0	463.1	-8.7	-29.2	17.0	609.7	633.7	313.6	9.3	1.000139
22000.0	454.1	-9.7	-30.1	17.0	600.2	632.4	309.5	10.1	1.000136
22500.0	445.2	-10.8	-30.8	17.3	591.0	631.1	309.4	10.3	1.000134
23000.0	436.5	-11.9	-31.4	17.9	581.9	629.8	308.0	10.3	1.000132
23500.0	427.9	-13.1	-32.1	18.4	572.9	628.4	304.8	10.0	1.000130

STATION ALTITUDE 4051.37 FEET MSL  
 19 JUNE 81 1530 HRS MDT  
 ASCENSION NO. 129

UPPER AIR DATA  
 1700180129  
 LC-37

GEODETIC COORDINATES  
 32.40175 LAT DEG  
 106.31232 LON DEG

TABLE 10 CON'T

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
24000.0	419.5	-14.2	-32.7	19.0	564.1	627.0	301.8	10.1	1.000128
24500.0	411.1	-15.6	-33.9	19.0	555.9	625.3	299.4	10.5	1.000126
25000.0	402.9	-17.0	-35.1	19.0	547.8	623.6	301.5	10.8	1.000124
25500.0	394.7	-18.3	-35.7	20.0	539.4	622.0	305.5	11.0	1.000122
26000.0	386.6	-19.6	-36.0	21.5	531.0	620.5	312.5	11.2	1.000120
26500.0	378.7	-20.8	-36.4	23.0	522.7	618.9	321.9	11.6	1.000118
27000.0	371.0	-22.1	-36.9	24.6	514.6	617.4	329.6	12.3	1.000116
27500.0	363.4	-23.4	-37.4	26.1	506.6	615.8	334.6	13.0	1.000114
28000.0	355.9	-24.6	-37.9	27.6	498.8	614.2	338.9	13.6	1.000112
28500.0	348.6	-25.9	-38.5	29.1	491.0	612.7	341.3	12.7	1.000111
29000.0	341.5	-27.1	-39.1	30.7	483.5	611.1	344.0	11.7	1.000109
29500.0	334.3	-28.2	-40.2	30.5	475.4	609.8	342.8	12.4	1.000107
30000.0	327.3	-29.2	-41.3	29.8	467.3	608.5	340.8	13.5	1.000105
30500.0	320.4	-30.2	-42.4	29.1	459.3	607.3	338.3	16.1	1.000103
31000.0	313.6	-31.2	-43.5	28.4	451.5	606.0	336.4	18.8	1.000101
31500.0	307.0	-32.2	-44.6	27.7	443.8	604.7	330.8	19.8	1.000100
32000.0	300.5	-33.2	-45.7	27.1	436.2	603.5	325.9	21.0	1.000098
32500.0	294.0	-34.4	-47.0	26.3	428.9	602.0	323.5	21.1	1.000096
33000.0	287.7	-35.6	-48.2	25.6	421.8	600.5	322.1	20.3	1.000094
33500.0	281.5	-36.8	-50.0	23.5**	414.8	599.0	326.3	15.7	1.000093
34000.0	275.3	-38.4	-57.8	10.9**	408.6	596.9	331.0	12.2	1.000091
34500.0	269.3	-40.0			402.3	594.9	330.3	11.3	1.000090
35000.0	263.4	-41.1			395.3	593.5	327.4	11.3	1.000088
35500.0	257.5	-42.1			388.4	592.1	321.4	13.3	1.000087
36000.0	251.8	-43.2			381.6	590.7	316.5	14.5	1.000085
36500.0	246.2	-44.1			374.5	589.6	319.3	14.0	1.000083
37000.0	240.7	-44.9			367.3	588.5	320.2	13.7	1.000082
37500.0	235.3	-45.7			360.3	587.5	321.2	13.6	1.000080
38000.0	230.0	-46.5			353.5	586.5	318.2	13.5	1.000079
38500.0	224.7	-47.3			346.6	585.5	309.4	13.9	1.000077
39000.0	219.6	-48.1			339.9	584.4	303.4	14.5	1.000076
39500.0	214.6	-48.9			333.4	583.4	300.5	15.2	1.000074
40000.0	209.7	-49.7			326.9	582.3	303.4	16.2	1.000073
40500.0	204.9	-50.6			320.6	581.2	311.7	17.5	1.000071
41000.0	200.2	-51.4			314.5	580.2	312.2	18.9	1.000070
41500.0	195.6	-52.6			308.9	578.5	304.6	20.3	1.000069
42000.0	191.0	-53.9			303.5	576.8	302.4	21.8	1.000068
42500.0	186.5	-54.8			297.5	575.7	306.7	23.3	1.000066
43000.0	182.1	-55.5			291.5	574.8	310.3	24.1	1.000065
43500.0	177.8	-56.2			285.6	573.8	313.8	23.2	1.000064

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4051.37 FEET MSL		UPPER AIR DATA		GEODETIC COORDINATES	
19 JUNE 81		1700180129		32.40175 LAT DEG	
ASCENSION NO. 129		LC-37		106.31232 LON DEG	

TABLE 10 CON'T								
GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
44000.0	173.6	-56.9		279.8	572.8	316.3	22.3	1.000062
44500.0	169.5	-57.7		274.1	571.9	311.2	20.8	1.000061
45000.0	165.5	-58.7		268.9	570.4	305.2	19.5	1.000060
45500.0	161.5	-60.3		264.4	568.4			1.000059
46000.0	157.7	-61.6		259.7	566.6			1.000058
46500.0	153.8	-62.5		254.4	565.5			1.000057
47000.0	150.1	-63.3		249.2	564.4			1.000055



STATION ALTITUDE 4051.37 FEET MSL  
19 JUNE 81 1530 HRS MDT  
ASCENSION NO. 129

MANDATORY LEVELS  
1700180129  
LC-37

GEODETTIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

TABLE 11

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE		DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	4891.	34.1	4.8	16.	216.6	4.4
800.0	6674.	29.4	1.5	17.	239.3	3.2
750.0	8540.	24.3	-2.1	17.	276.4	1.6
700.0	10499.	18.8	-6.0	18.	3.3	.5
650.0	12556.	12.0	-10.0	20.	251.6	9.4
600.0	14728.	5.6	-12.2	26.	261.1	8.2
550.0	17036.	-.3	-16.1	29.	331.4	8.8
500.0	19508.	-6.2	-26.0	19.	15.3	9.0
450.0	22197.	-10.2	-30.5	17.	309.5	10.2
400.0	25135.	-17.5	-35.5	19.	302.9	10.9
350.0	28364.	-25.6	-38.4	29.	340.8	12.9
300.0	31972.	-33.3	-45.8	27.	325.8	21.0
250.0	36082.	-43.6			318.8	14.4
200.0	40921.	-51.4			312.2	18.9
175.0	43728.	-56.7			316.2	22.7
150.0	46855.	-63.3				

STATION ALTITUDE 3989.00 FEET MSL  
19 JUNE 81  
ASCENSION NO. 400

SIGNIFICANT LEVEL DATA

1700020400  
WHITE SANDS

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

TABLE 12

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE		REL. HUM. PERCENT
		AIR DEGREES	DEWPOINT CENTIGRADE	
876.6	3989.0	37.5	10.0	19.0
850.0	4910.0	34.6	7.6	19.0
769.0	7847.1	26.4	.9	19.0
700.0	10522.8	17.2	-5.3	21.0
634.4	13246.2	10.4	-8.8	25.0
558.2	16686.6	.8	-12.5	36.0
517.6	18661.2	-4.8	-18.9	32.0
500.0	19556.1	-4.8	-23.7	21.0
463.2	21516.7	-9.4	-28.1	20.0
440.6	22784.1	-11.2	-20.6	22.0
400.0	25195.2	-17.7	-32.5	26.0
344.3	28825.3	-26.5	-37.0	36.0
300.0	32061.2	-32.6	-44.5	29.0
279.4	33693.7	-37.9	-49.5	28.0
267.6	34667.5	-40.5		
250.0	36186.3	-43.0		
200.0	41045.4	-52.0		
150.0	47038.3	-62.8		

STATION ALTITUDE 3989.00 FEET MSL  
19 JUNE 81 1630 HRS MDT  
ASCENSION NO. 400

UPPER AIR DATA  
1700020400  
WHITE SANDS

GEODETIC COORDINATES  
32.40043 LAT UEG  
106.37033 LON DEG

TABLE 13

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
3989.0	870.6	37.5	10.0	19.0	977.8	688.5	180.0	7.0	1.000266
4000.0	870.3	37.5	9.9	19.0	977.6	688.4	180.0	7.0	1.000266
4500.0	861.7	35.9	8.7	19.0	966.6	686.6	179.5	9.2	1.000260
5000.0	847.4	34.3	7.4	19.0	955.6	684.7	179.2	11.3	1.000254
5500.0	833.1	33.0	6.3	19.0	944.0	683.1	178.9	13.4	1.000249
6000.0	819.0	31.6	5.1	19.0	932.5	681.4	178.8	15.5	1.000244
6500.0	805.1	30.2	4.0	19.0	921.2	679.8	178.9	15.7	1.000239
7000.0	791.5	28.8	2.9	19.0	910.0	678.1	179.2	14.2	1.000234
7500.0	778.2	27.4	1.7	19.0	899.0	676.5	179.9	12.7	1.000229
8000.0	764.9	25.9	.6	19.1	888.3	674.7	181.5	11.0	1.000225
8500.0	751.6	24.2	-.5	19.5	878.0	672.7	183.7	9.4	1.000221
9000.0	738.5	22.4	-1.7	19.9	867.9	670.7	186.5	8.0	1.000217
9500.0	725.6	20.7	-2.9	20.2	858.0	668.7	189.9	7.1	1.000213
10000.0	713.0	19.0	-4.0	20.6	848.1	666.7	194.2	6.3	1.000209
10500.0	700.6	17.3	-5.2	21.0	838.4	664.7	199.2	5.3	1.000205
11000.0	688.0	16.0	-5.8	21.7	827.1	663.2	205.6	4.0	1.000202
11500.0	675.7	14.8	-6.5	22.4	815.9	661.7	217.3	2.9	1.000199
12000.0	663.6	13.5	-7.1	23.2	804.8	660.3	227.3	3.3	1.000196
12500.0	651.7	12.3	-7.7	23.9	793.9	658.8	233.4	4.0	1.000193
13000.0	640.1	11.0	-8.4	24.6	783.2	657.3	243.3	6.2	1.000190
13500.0	628.4	9.7	-8.9	25.8	772.6	655.8	248.9	8.1	1.000187
14000.0	616.9	8.3	-9.4	27.4	762.1	654.2	248.0	7.7	1.000184
14500.0	605.5	6.9	-9.9	29.0	751.8	652.5	246.4	7.5	1.000181
15000.0	594.3	5.5	-10.4	30.6	741.7	650.9	229.8	8.2	1.000179
15500.0	583.4	4.1	-11.0	32.2	731.7	649.2	247.5	10.9	1.000176
16000.0	572.6	2.7	-11.6	33.8	721.9	647.6	255.8	12.2	1.000173
16500.0	562.1	1.3	-12.3	35.4	712.3	645.9	265.2	11.3	1.000171
17000.0	551.5	-.1	-13.6	35.4	702.6	644.2	285.0	9.4	1.000167
17500.0	541.1	-1.5	-15.2	34.4	693.0	642.5	305.5	8.6	1.000164
18000.0	530.9	-2.9	-16.8	33.3	683.6	640.8	326.7	8.8	1.000161
18500.0	520.8	-4.3	-18.4	32.3	674.2	639.1	339.8	9.2	1.000158
19000.0	510.9	-4.8	-20.5	27.8	662.6	638.5	351.2	10.0	1.000154
19500.0	501.1	-4.8	-23.4	21.7	650.0	638.4	348.4	10.8	1.000150
20000.0	491.4	-5.8	-24.7	20.8	640.0	637.1	340.0	11.6	1.000147
20500.0	481.9	-7.0	-25.8	20.5	630.5	635.7	340.3	12.1	1.000144
21000.0	472.6	-8.2	-27.0	20.3	621.1	634.3	333.9	12.6	1.000142
21500.0	463.5	-9.4	-28.1	20.0	611.8	632.9	330.8	12.8	1.000140
22000.0	454.4	-10.1	-28.3	20.8	601.5	632.0	329.0	12.8	1.000137
22500.0	445.6	-10.8	-28.5	21.6	591.4	631.2	326.4	12.4	1.000135
23000.0	436.8	-11.8	-29.0	22.4	581.9	630.0	323.4	11.9	1.000133

STATION ALTITUDE 3989.00 FEET MSL  
19 JUNE 81 1630 HRS MDT  
ASCENSION NO. 400

UPPER AIR DATA  
1700020400  
WHITE SANDS

GEODETTIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

TABLE 13 CON'T

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION (TN) DEGREES	SPEED KNOTS	INDEX OF REFRACTION
23500.0	426.1	-13.1	23.2	573.3	628.3	316.4	11.1	1.000131
24000.0	419.6	-14.5	24.0	564.9	626.7	307.6	10.5	1.000129
24500.0	411.3	-15.8	24.8	556.6	625.1	303.3	10.3	1.000127
25000.0	403.1	-17.2	25.7	548.4	623.4	299.7	10.2	1.000125
25500.0	395.0	-18.4	26.8	540.0	621.9	304.9	10.1	1.000123
26000.0	386.9	-19.7	28.2	531.5	620.4	311.2	10.2	1.000121
26500.0	379.0	-20.9	29.6	523.2	618.9	319.4	10.5	1.000119
27000.0	371.3	-22.1	31.0	515.0	617.4	327.6	10.9	1.000117
27500.0	363.7	-23.3	32.3	506.9	615.9	332.4	10.5	1.000115
28000.0	356.2	-24.5	33.7	499.0	614.4	336.4	9.7	1.000113
28500.0	349.0	-25.7	35.1	491.2	612.9	341.0	9.9	1.000111
29000.0	341.7	-26.8	35.6	483.2	611.5	345.0	10.9	1.000109
29500.0	334.6	-27.8	34.5	474.9	610.3	346.8	12.5	1.000107
30000.0	327.5	-28.7	33.5	466.7	609.1	346.5	14.7	1.000105
30500.0	320.6	-29.7	32.4	458.6	608.0	347.4	15.6	1.000103
31000.0	313.9	-30.6	31.3	450.7	606.8	349.4	15.5	1.000101
31500.0	307.3	-31.5	30.2	442.9	605.6	353.7	14.2	1.000100
32000.0	300.8	-32.5	29.1	435.3	604.4	3	12.6	1.000098
32500.0	294.3	-34.0	28.7	428.7	602.5	4.0	10.3	1.000096
33000.0	288.0	-35.6	28.4	422.4	600.4	8.1	7.8	1.000095
33500.0	281.8	-37.3	28.1	416.1	598.4	9.5	6.1	1.000093
34000.0	275.6	-38.7	19.2*	409.6	596.5	10.0	4.6	1.000092
34500.0	269.6	-40.1	4.8**	402.9	594.8	358.1	4.3	1.000090
35000.0	263.6	-41.0		395.7	593.5	344.8	4.7	1.000088
35500.0	257.8	-41.9		388.3	592.5	341.7	6.1	1.000086
36000.0	252.1	-42.7		381.1	591.4	341.4	7.7	1.000085
36500.0	246.4	-43.6		373.9	590.3	341.1	9.7	1.000083
37000.0	240.8	-44.5		366.9	589.1	340.8	11.8	1.000082
37500.0	235.4	-45.4		360.1	587.9	337.8	13.1	1.000080
38000.0	230.0	-46.4		353.3	586.7	334.0	14.0	1.000079
38500.0	224.8	-47.3		346.7	585.5	329.1	14.3	1.000077
39000.0	219.7	-48.2		340.2	584.3	322.7	14.0	1.000076
39500.0	214.7	-49.1		333.9	583.1	316.2	14.3	1.000074
40000.0	209.8	-50.1		327.7	581.9	310.4	15.5	1.000073
40500.0	205.1	-51.0		321.6	580.7	306.0	16.8	1.000072
41000.0	200.4	-51.9		315.6	579.5	305.7	18.2	1.000070
41500.0	195.7	-52.8		309.4	578.3	305.5	19.6	1.000069
42000.0	191.0	-53.7		303.3	577.1	305.0	20.0	1.000068
42500.0	186.5	-54.6		297.3	575.9	312.6	20.4	1.000066
43000.0	182.1	-55.5		291.5	574.7	315.1	19.4	1.000065

\*\* AT LEAST ONE ADDITIONAL RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL		UPPER AIR DATA		GEODETIC COORDINATES	
19 JUNE 81		1700020400		32.40043 LAT DEG	
ASCENSION NO. 400		WHITE SANDS		106.37033 LON DEG	

TABLE 13 CON'T

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
						DIRECTION DEGREES (TN)	SPEED KNOTS	
43500.0	177.8	-56.4		285.7	573.5	317.4	17.8	1.000064
44000.0	173.6	-57.3		280.1	572.3	318.3	15.8	1.000062
44500.0	169.4	-58.2		274.6	571.1	315.5	13.1	1.000061
45000.0	165.4	-59.1		269.3	569.9	311.3	10.4	1.000060
45500.0	161.5	-60.0		264.0	568.7			1.000059
46000.0	157.7	-60.9		258.8	567.5			1.000058
46500.0	153.9	-61.8		253.7	566.3			1.000057
47000.0	150.3	-62.7		248.8	565.1			1.000055

STATION ALTITUDE 3982.00 FEET MSL  
19 JUNE 81 1030 HRS MDT  
ASCENSION NO. 400

MANDATORY LEVELS  
1700020400  
WHITE SANDS

GEODLTIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

TABLE 14

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEW POINT CENTIGRADE		DIRECTION DEGREES (TN)	SPEED KNOTS
850.0	4906.	34.6	7.6	19.	179.2	10.9
800.0	6692.	29.6	3.6	19.	179.0	15.2
750.0	8560.	24.0	-7	20.	184.0	9.2
700.0	10512.	17.2	-5.3	21.	199.3	5.2
650.0	12566.	12.1	-7.8	24.	234.1	4.1
600.0	14742.	6.2	-10.1	30.	223.4	7.8
550.0	17054.	-3	-13.8	35.	288.1	9.3
500.0	19528.	-4.8	-23.7	21.	348.2	10.9
450.0	22216.	-10.4	-28.4	21.	327.9	12.7
400.0	25152.	-17.7	-32.5	26.	300.9	10.1
350.0	28381.	-25.5	-36.5	35.	340.3	9.7
300.0	31996.	-32.6	-44.5	29.	.9	12.5
250.0	36106.	-43.0			341.3	8.3
200.0	40944.	-52.0			305.7	18.2
175.0	43750.	-57.0			319.0	16.7
150.0	46909.	-62.8				

STATION ALTITUDE 4051.37 FEET MSL  
19 JUNE 81 1730 HRS MDT  
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SIGNIFICANT LEVEL DATA  
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TABLE 15

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE		REL. HUM. PERCENT
		AIR DEGREES	DEW POINT CENTIGRADE	
873.3	4051.4	37.5	-6.1	6.0
850.0	4858.9	35.3	5.7	16.0
777.8	7470.9	28.0	-1	16.0
700.0	10486.7	19.0	-7.4	16.0
673.6	11563.1	15.5	-10.2	16.0
575.6	15841.9	2.8	-16.2	23.0
515.6	18730.9	-4.6	-22.5	23.0
500.0	19525.2	-5.2	-26.4	17.0
483.2	20405.8	-6.4	-28.0	16.0
459.6	21688.7	-8.3	-29.6	16.0
444.4	22543.7	-10.5	-31.4	16.0
421.8	23856.8	-13.8	-33.5	17.0
400.0	25174.6	-17.3	-35.3	19.0
350.8	28356.6	-26.1	-39.5	27.0
337.6	29267.4	-27.7	-39.9	30.0
318.2	30661.7	-30.0	-45.6	20.0
300.0	32033.8	-33.2	-49.3	18.0
269.2	34509.7	-39.2		
250.0	36168.3	-42.4		
240.8	36999.3	-44.5		
230.0	38008.6	-45.9		
200.0	41033.4	-51.9		
172.4	44175.2	-56.1		
149.4	47126.1	-63.4		

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

STATION ALTITUDE 4051.37 FEET MSL  
19 JUNE 81 1700 HRS MDT  
ASCENSION NO. 130

UPPER AIR DATA  
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GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

TABLE 16

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION (TN) SPEED KNOTS	INDEX OF REFRACTION
4051.4	875.3	37.5	-6.1	977.7	687.2	200.0	1.000233
4500.0	860.3	36.3	11.6	965.6	686.3	200.6	1.000243
5000.0	845.9	34.9	16.0	952.8	685.1	201.1	1.000248
5500.0	831.7	33.5	16.0	941.2	683.5	201.5	1.000243
6000.0	817.7	32.1	16.0	929.8	681.9	201.9	1.000238
6500.0	803.9	30.7	16.0	918.6	680.2	202.2	1.000234
7000.0	790.3	29.3	16.0	907.4	678.6	204.2	1.000229
7500.0	777.0	27.9	16.0	896.5	677.0	207.8	1.000225
8000.0	763.6	26.4	16.0	885.5	675.2	211.5	1.000221
8500.0	750.3	24.9	16.0	874.7	673.5	213.3	1.000216
9000.0	737.3	23.4	16.0	864.0	671.7	214.5	1.000212
9500.0	724.6	21.9	16.0	853.5	670.0	215.6	1.000209
10000.0	712.0	20.5	16.0	843.1	668.2	214.0	1.000205
10500.0	699.7	19.0	16.0	832.8	666.5	210.6	1.000201
11000.0	687.3	17.3	16.0	822.8	664.6	206.7	1.000198
11500.0	675.1	15.7	16.0	812.9	662.6	204.5	1.000194
12000.0	662.9	14.2	16.0	802.4	660.9	204.7	1.000191
12500.0	650.8	12.7	16.0	791.9	659.2	217.9	1.000188
13000.0	639.0	11.2	16.0	781.6	657.4	239.3	1.000186
13500.0	627.3	9.8	16.0	771.4	655.7	243.9	1.000183
14000.0	615.9	8.3	16.0	761.4	654.0	244.5	1.000180
14500.0	604.7	6.8	16.0	751.6	652.2	252.1	1.000177
15000.0	593.7	5.3	16.0	741.8	650.5	261.1	1.000175
15500.0	582.9	3.8	16.0	732.3	648.7	278.4	1.000172
16000.0	572.1	2.4	16.0	722.6	647.0	294.6	1.000169
16500.0	561.3	1.1	16.0	712.3	645.3	309.1	1.000166
17000.0	550.8	-0.2	16.0	702.2	643.6	317.3	1.000163
17500.0	540.4	-1.4	16.0	692.2	642.4	323.0	1.000161
18000.0	530.2	-2.7	16.0	682.4	640.9	338.6	1.000158
18500.0	520.2	-4.0	16.0	672.8	639.4	352.0	1.000155
19000.0	510.3	-4.8	16.0	662.0	638.4	354.5	1.000152
19500.0	500.5	-5.2	16.0	650.3	637.9	354.9	1.000149
20000.0	490.9	-5.8	16.0	639.4	637.1	346.4	1.000146
20500.0	481.4	-6.5	16.0	628.8	636.3	334.8	1.000143
21000.0	472.1	-7.3	16.0	618.3	635.4	330.2	1.000141
21500.0	463.0	-8.0	16.0	608.1	634.5	326.0	1.000138
22000.0	454.0	-9.1	16.0	598.7	633.2	322.4	1.000136
22500.0	445.2	-10.4	16.0	590.0	631.6	319.0	1.000134
23000.0	436.4	-11.6	16.0	581.2	630.1	315.4	1.000132
23500.0	427.8	-12.9	16.0	572.5	628.6	311.7	1.000130



GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

UPPER AIR DATA  
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STATION ALTITUDE 4051.37 FEET MSL  
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TABLE 16 CON'T

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION (TN) DEGREES	SPEED KNOTS	INDEX OF REFRACTION
24000.0	419.4	-14.2	17.2	564.0	627.0	308.5	10.5	1.000128
24500.0	411.0	-15.5	18.0	555.6	625.4	307.7	10.2	1.000126
25000.0	402.8	-16.8	18.7	547.3	623.8	307.6	10.0	1.000124
25500.0	394.7	-18.2	19.8	539.1	622.1	309.2	10.2	1.000122
26000.0	386.6	-19.6	21.1	531.0	620.4	310.5	10.4	1.000120
26500.0	378.7	-21.0	22.3	523.0	618.7	311.2	11.0	1.000118
27000.0	371.0	-22.3	23.6	515.2	617.0	312.0	11.4	1.000116
27500.0	363.4	-23.7	24.8	507.5	615.3	314.7	11.3	1.000114
28000.0	356.0	-25.1	26.1	499.9	613.6	317.4	11.3	1.000113
28500.0	348.7	-26.4	27.5	492.1	612.1	329.3	11.8	1.000111
29000.0	341.4	-27.2	29.1	483.6	611.0	340.4	12.9	1.000109
29500.0	334.3	-28.1	28.3	475.1	609.9	353.6	15.0	1.000107
30000.0	327.3	-28.9	24.7	466.7	608.9	2.0	17.1	1.000105
30500.0	320.4	-29.7	21.2	458.5	607.9	5.6	17.9	1.000103
31000.0	313.6	-30.8	19.5	450.7	606.5	11.9	16.1	1.000101
31500.0	307.0	-32.0	18.8	443.3	605.1	25.6	12.3	1.000099
32000.0	300.4	-33.1	18.0	436.0	603.6	38.9	7.8	1.000098
32500.0	293.9	-34.3	14.6**	428.7	602.1	57.8	4.2	1.000096
33000.0	287.6	-35.5	11.0**	421.6	600.5	6.6	3.3	1.000094
33500.0	281.4	-36.8	7.3**	414.6	599.0	346.9	4.7	1.000092
34000.0	275.3	-38.0	3.7**	407.7	597.5	350.1	6.3	1.000091
34500.0	269.3	-39.2	.1**	401.0	595.9	349.5	6.8	1.000089
35000.0	263.4	-40.1		393.8	594.7	347.8	7.0	1.000088
35500.0	257.6	-41.1		386.7	593.4	345.6	7.1	1.000086
36000.0	251.9	-42.1		379.7	592.2	343.8	7.3	1.000085
36500.0	246.3	-43.2		373.2	590.7	348.8	9.3	1.000083
37000.0	240.8	-44.5		366.9	589.1	351.4	11.3	1.000082
37500.0	235.4	-45.2		359.7	588.2	349.2	13.2	1.000080
38000.0	230.1	-45.9		352.7	587.3	346.5	14.5	1.000079
38500.0	224.8	-46.9		346.1	586.0	338.7	13.2	1.000077
39000.0	219.7	-47.9		339.7	584.7	329.2	12.5	1.000076
39500.0	214.7	-48.9		333.4	583.4	319.0	12.7	1.000074
40000.0	209.8	-49.9		327.3	582.2	315.3	14.5	1.000073
40500.0	205.0	-50.8		321.2	580.9	314.5	16.8	1.000072
41000.0	200.3	-51.8		315.3	579.6	316.2	19.9	1.000070
41500.0	195.6	-52.5		308.9	578.7	315.5	22.6	1.000069
42000.0	191.1	-53.2		302.6	577.8	310.0	24.0	1.000067
42500.0	186.6	-53.9		296.4	576.9	312.0	22.5	1.000066
43000.0	182.2	-54.5		290.4	576.0	320.0	19.5	1.000065
43500.0	178.0	-55.2		284.5	575.1	324.1	19.6	1.000063

\*\* AT LAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4051.37 FEET MSL  
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TABLE 16 CON'T

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LONG DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
44000.0	173.8	-55.9		278.7	574.3	328.0	20.0	1.000062
44500.0	169.7	-56.9		273.4	572.9	320.9	18.9	1.000061
45000.0	165.6	-58.1		268.4	571.2	311.9	18.2	1.000060
45500.0	161.7	-59.4		263.5	569.6			1.000059
46000.0	157.8	-60.6		258.6	568.0			1.000058
46500.0	154.0	-61.9		253.9	566.3			1.000057
47000.0	150.3	-63.1		249.3	564.6			1.000056

STATION ALTITUDE 4051.37 FEET MSL  
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MANDATORY LEVELS  
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TABLE 17

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	ATP DEGREES	DEWPOINT CENTIGRADE		DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	4855.	35.3	517	16.	201.0	5.8
800.0	6644.	30.3	1.7	16.	202.3	7.9
750.0	8515.	24.9	-2.6	16.	213.4	7.9
700.0	10476.	19.0	-7.4	16.	210.7	7.4
650.0	12537.	12.6	-11.3	18.	220.2	5.9
600.0	14713.	6.2	-14.4	21.	255.4	10.2
550.0	17023.	-.3	-18.8	23.	317.7	10.6
500.0	19497.	-5.2	-26.4	17.	355.0	15.0
450.0	22191.	-9.7	-30.7	16.	320.7	13.4
400.0	25132.	-17.3	-35.3	19.	308.1	10.1
350.0	28358.	-26.2	-39.5	27.	326.8	11.7
300.0	31969.	-33.2	-49.3	18.	39.6	7.6
250.0	36088.	-42.4			345.6	7.9
200.0	40933.	-51.9			316.3	20.0
175.0	43747.	-55.7			326.8	19.9
150.0	46916.	-63.2				

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